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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,917	10/24/2003	Linfang Zhu	224713	9043

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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,917

Applicant(s)

ZHU ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/29/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. All outstanding rejections are overcome by applicants' amendment filed 10/12/05.

In light of the new grounds of rejection as set forth below, the following action is non-final.

Information Disclosure Statement

2. It is noted that WO 98/13430 has been stricken from the IDS filed 8/29/05 as redundant given that the reference was already cited on the IDS filed 7/19/04

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1, 5-10, 12-18, 20-21, 23, and 25-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 8, 11-15,

38, 42, 53, and 55-57 of copending Application No. 10/314,163 in view of Zhu et al. '933 (U.S. 6,221,933). Although the conflicting claims are not identical, they are not patentably distinct for the reasons set forth below.

Copending 10/314,163 discloses white opaque pigment ink jet ink comprising about 55 to about 95% organic solvent, white pigment, hydrophobic conductivity agent identical to those presently claimed, about 5 to about 25% binder, i.e. acidic resin, that is acrylic resin, and additive selected from humectant, co-solvent, co-resin, defoamer, dispersing agent, or surfactant. There is also disclosed a method of printing a mark on a substrate comprising directing a stream of droplets of the ink onto a substrate and controlling the direction of the droplets so as to form the mark.

It is noted that copending claims 55-57 disclose the use of blue, yellow, and red colorant in addition to opaque pigment while the present claims are silent with respect to such colorant. However, in light of the open language of the present claims, i.e. "comprising", it is clear that the present claims are open to the inclusion of additional ingredients including colorant such as those disclosed by copending 10/314,163.

The difference between copending 10/314,163 and the present claimed invention is the requirement in the claims of (a) polyamine and specific amounts of pigment and hydrophobic conductivity agent, (b) specific organic solvent, (c) specific acidic resin, and (d) specific substrate.

With respect to difference (a), Zhu et al. '933, which is drawn to ink jet inks, disclose the use of about 0.01 to about 5% polyamine such as polyethyleneimine in order to produce a

durable printed message that resists condensation of moisture and/or resists smearing or damage when exposed to ice water (col.5, lines 14-19 and col.7, lines 9-11).

Further, it is noted that while copending 10/314,163 discloses the use of about 5 to about 25% acrylic resin and about 55 to about 95% organic solvent, the copending claims are silent with respect to the amount of pigment and hydrophobic conductivity agent.

Applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619, 622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to paragraphs 23 and 26 of copending 10/314,163 which discloses that pigment is utilized in amount of about 0.1 to about 10% and hydrophobic conductivity agent in amount of less than 5%.

It is noted that the amounts of polyamine, organic solvent, acrylic resin, pigment, and hydrophobic conductivity agent disclosed by the copending claims in view of Zhu et al. overlap those presently claimed. As set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use polyamine in the ink of copending 10/314,163 in order to produce a durable printed message that resists condensation of moisture and/or resists smearing or damage when exposed to ice water and to use amounts of polyamine, organic solvent, acrylic resin, pigment, and hydrophobic conductivity agent, including those presently claimed, in order to produce ink with good resistance to condensation, smearing, and damage, desired drying time, desired color density, and good conductivity, and thereby arrive at the present claims from the copending ones.

With respect to difference (b), copending 10/314,163 is silent with respect to specific types of organic solvent.

Applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to paragraph 17 of copending 10/314,163 which discloses that the organic solvent includes ketones such as methyl ethyl ketone, esters, ethers, and amides.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use solvent, including that presently claimed, in order to produce ink with desired drying rate, and thereby arrive at the claimed invention.

With respect to difference (c), copending 10/314,163 is silent with respect to specific types of binder or acidic resin.

Applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619, 622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to paragraphs 27-29 of copending 10/314,163 which discloses that the binder includes acrylic resin possessing acid number less than 150 in order to produce ink with good adhesion that does not degrade. Although there is no explicit disclosure that the acrylic resin possesses carboxyl functionality, given that the acrylic resin possesses acid number, it is clear that the acrylic resin of the copending claims would inherently possess carboxyl functionality.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use acrylic resin with acid number less than 150 in the ink of copending 10/314,163 in order to produce ink with good adhesion that does not degrade, and thereby arrive at the claimed invention.

With respect to difference (d), copending 10/314,163 discloses a method of printing a mark on a substrate, however, there is no explicit disclosure of what type of substrate is utilized.

Applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to paragraph 12 of copending 10/314,163 which discloses that the ink is used to print high quality messages on substrates including glass.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to print ink of copending 10/314,163 on substrate including glass, and thereby arrive at the present claims from the copending ones.

This is a provisional obviousness-type double patenting rejection.

5. Claims 1, 5-10, 12-18, 20-21, 23, and 25-26 are directed to an invention not patentably distinct from claims 1, 8, 11-15, 38, 42, 53, and 55-57 of commonly assigned 10/314,163. Specifically, although the conflicting claims are not identical they are not patentably distinct in light of the reasons set forth in paragraph 3 above.

6. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302).

Commonly assigned 10/314,163, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

7. Claims 1, 5-10, 12-18, 20-21, 23, and 25-26 are provisionally rejected under 35 U.S.C. 103(a) as being obvious over copending Application No. 10/314,163 which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e) if published or patented. This provisional rejection under 35 U.S.C. 103(a) is based upon a presumption of future publication or patenting of the conflicting application. For an explanation of the rejection, see paragraph 3 above

This provisional rejection might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by a showing of a date

of invention for the instant application prior to the effective U.S. filing date of the copending application under 37 CFR 1.131. This rejection might also be overcome by showing that the copending application is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-3, 5-15, 17, and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. '933 (U.S. 6,221,933) in view of Mead et al. (U.S. 5,596,027) and Marshall et al. (U.S. 5,275,646).

Zhu et al. '933 disclose ink jet ink comprising up to 95%, preferably 30-80%, organic solvent including ketones such as methyl ethyl ketone, amides, lower alcohols such as ethanol, ethers, and esters, 0.01-5% polyamine such as polyethyleneimine, 1-10% pigment, 3-30% acidic resin having acid number of 10-250 such as acrylic resin. The acidic resin includes those known under the tradename Joncryl 586 and Joncryl 683 which are well known, as found in Mead et al. (col. 11, lines 17-19), as styrene/ α -methylstyrene/acrylic acid copolymers. Further, for specific types of pigments, Zhu et al. '933 refers to Mead et al. which discloses the use of opaque pigments such as titanium dioxide and other organic pigments (col.7, lines 8-39). Zhu et al. '933 further disclose method of printing the ink onto substrate such as glass by ejecting the ink from

printer onto the substrate wherein the process comprises directing a stream of ink droplets to the surface and controlling the direction of the droplets so as to form a mark on the substrate (col.1, lines 10-12 and 17-24, col.3, lines 32-34, col.4, lines 51-65, col.5, lines 1-13 and 35, col.7, lines 9-16, 32-33, 41, and 46-49, col.8, lines 23-25 and 41, col.9, lines 1, 45-47, and 55-60, and col.12, line 64-col.13, line 3).

The difference between Zhu et al. '933 and the present claimed invention is the requirement in the claims of hydrophobic conductivity agent.

Marshall et al., which is drawn to ink jet ink, disclose the use of 0.5-5% hydrophobic conductivity agent such as tetrabutylammonium tetrafluoroborate in order to impart sufficient conductivity to the ink so that ink droplets can be directed as desired from ink jet printer to substrate (col.1, lines 19-20 and col.4, lines 43-44 and 52).

In light of the motivation for using hydrophobic conductivity agent disclosed by Marshall et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such conductivity agent in the ink of Zhu et al. '933 in order to produce ink jet ink with conductivity sufficient for printing, and thereby arrive at the claimed invention.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. '933 in view of Mead et al. and Marshall et al. as applied to claims 1-3, 5-15, 17, and 20-26 above, and further in view of Wu et al. (U.S. 2003/0144375).

The difference between Zhu et al. '933 in view of Mead et al. and Marshall et al. and the present claimed invention is the requirement in the claims of Pigment Yellow 139.

Zhu et al. '933 disclose the use of opaque pigments including white pigment such as titanium dioxide.

Wu et al., which is drawn to ink jet inks, disclose the use of Pigment Yellow 139 in order to produce ink with desired color. Further, Wu et al. disclose the equivalence and interchangeability of white pigment such as titanium dioxide, as disclosed by Zhu et al., with Pigment Yellow 139 as presently claimed (paragraphs 137-138).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use Pigment Yellow 139 in the ink jet ink of Zhu et al. '933 in order to produce yellow ink, and thereby arrive at the claimed invention.

11. Claims 1-3, 5, 7, 12-15, 17-22, and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. (U.S. 2003/0227531) in view of Marshall et al. (U.S. 5,275,646).

Hosoi et al. disclose ink jet ink comprising water, 0.5-20% opaque pigment, i.e. Pigment Yellow 74 and Pigment Yellow 98, 0.1-10% acidic resin such as acrylic resin, 0.05-20% polyethyleneimine, 1-60% solvent including polyhydric alcohol and ethanol, surfactant, and less than 20% conductivity agent. Hosoi et al. further disclose method of printing the ink onto substrate by ejecting the ink from printer onto the substrate (paragraphs 2, 55, 61, 66-69, 72, 83, 86, 94, 96-98, and 112).

The difference between Hosoi et al. and the present claimed invention is the requirement in the claims of specific conductivity agent.

Marshall et al., which is drawn to ink jet ink, disclose the use of 0.5-5% hydrophobic conductivity agent such as tetrabutylammonium tetrafluoroborate in order to impart sufficient

conductivity to the ink so that ink droplets can be directed as desired from ink jet printer to substrate (col.1, lines 19-20 and col.4, lines 43-44 and 52).

In light of the motivation for using hydrophobic conductivity agent disclosed by Marshall et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such conductivity agent in the ink of Hosoi et al. in order to produce ink jet ink with conductivity sufficient for printing, and thereby arrive at the claimed invention.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. in view of Marshall et al. as applied to claims 1-3, 5, 7, 12-15, 17-22, and 25-26 above, and further in view of Santilli et al. (U.S. 5,738,716).

The difference between Hosoi et al. in view of Marshall et al. and the present claimed invention is the requirement in the claims of Pigment Yellow 139.

Hosoi et al. disclose the use of opaque pigments including Pigment Yellow 74, however, there is no disclosure of Pigment Yellow 139.

Santilli et al., which is drawn to ink jet inks, disclose the use of Pigment Yellow 139 in order to produce ink with desired color wherein the pigment does not release toxic byproduct when it degrades. Further, Santilli et al. disclose the equivalence and interchangeability of Pigment Yellow 74, as disclosed by Hosoi et al., with Pigment Yellow 139 as presently claimed (col.2, lines 1-7).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use Pigment Yellow 139 in the ink jet ink of Hosoi et al. in order to produce yellow ink, and thereby arrive at the claimed invention.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. in view of Marshall et al. as applied to claims 1-3, 5, 7, 12-15, 17-22, and 25-26 above, and further in view of Zhu et al. '933 (U.S. 6,221,933)

The difference between Hosoi et al. in view of Marshall et al. and the present claimed invention is the requirement in the claims of specific organic solvent.

Zhu et al. '933, which is drawn to ink jet ink, disclose the use of methyl ethyl ketone in order to improve ink stability and inhibit gel formation (col.4, lines 51-57 and 64-67).

In light of the motivation for using methyl ethyl ketone disclosed by Zhu et al. '933 as described above, it therefore would have been obvious to one of ordinary skill in the art to use methyl ethyl ketone in the ink jet ink of Hosoi et al. in order to produce stable ink, and thereby arrive at the claimed invention.

14. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. in view of Marshall et al. as applied to claims 1-3, 5, 7, 12-15, 17-22, and 25-26 above, and further in view of Mead et al. (U.S. 5,596,027).

The difference between Hosoi et al. in view of Marshall et al. and the present claimed invention is the requirement in the claims of specific acidic resin.

Mead et al., which is drawn to ink jet ink, disclose the use of acidic resin with acid number of 100-300 such as styrene/ α -methylstyrene/acrylic acid copolymer in order to produce water resistant image (col.10, lines 21-24 and col.11, lines 16-19).

In light of the motivation for using specific acidic resin disclosed by Mead et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use

styrene/ α -methylstyrene/acrylic acid copolymer in the ink jet ink of Hosoi et al. in order to produce ink that produces water resistant images, and thereby arrive at the claimed invention.

15. Claims 1-3, 5-15, 17, and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. '933 (U.S. 6,221,933) in view of Mead et al. (U.S. 5,596,027) and Zhu et al. '878 (U.S. 2004/0110868).

Zhu et al. '933 disclose ink jet ink comprising up to 95% organic solvent including ketones such as methyl ethyl ketone, amides, lower alcohols such as ethanol, ethers, and esters, 0.01-5% polyamine such as polyethyleneimine, 1-10% pigment, 3-30% acidic resin having acid number of 10-250 such as acrylic resin. The acidic resin includes those known under the tradename Joncryl 586 and Joncryl 683 which are well known, as found in Mead et al. (col. 11, lines 17-19), as styrene/ α -methylstyrene/acrylic acid copolymers. Further, for specific types of pigments, Zhu et al. refers to Mead et al. which discloses the use of opaque pigments such as titanium dioxide and other organic pigments (col.7, lines 8-39). Zhu et al. '933 further disclose method of printing the ink onto substrate such as glass by ejecting the ink from printer onto the substrate (col.1, lines 10-12 and 17-24, col.3, lines 32-34, col.4, lines 51-65, col.5, lines 1-13 and 35, col.7, lines 9-16, 32-33, 41, and 46-49, col.8, lines 23-25 and 41, col.9, lines 1, 45-47, and 55-60).

The difference between Zhu et al. '933 and the present claimed invention is the requirement in the claims of hydrophobic conductivity agent.

Zhu et al. '878, which is drawn to ink jet ink, disclose the use of less than 5% hydrophobic conductivity agent such as tetrabutylammonium hexafluorophosphate (paragraphs 14 and 24) in order to impart sufficient conductivity to the ink.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use hydrophobic conductivity agent in the ink of Zhu et al. '933 in order to produce ink jet ink with conductivity sufficient for printing, and thereby arrive at the claimed invention.

16. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. '933 in view of Mead et al. and Zhu et al. '878 as applied to claims 1-3, 5-15, 17, and 20-26 above, and further in view of Wu et al. (U.S. 2003/0144375).

The difference between Zhu et al. '933 in view of Mead et al. and Zhu et al. '878 and the present claimed invention is the requirement in the claims of Pigment Yellow 139.

Zhu et al. '933 disclose the use of opaque pigments including white pigment such as titanium dioxide.

Wu et al., which is drawn to ink jet inks, disclose the use of Pigment Yellow 139 in order to produce ink with desired color. Further, Wu et al. disclose the equivalence and interchangeability of white pigment such as titanium dioxide, as disclosed by Zhu et al., with Pigment Yellow 139 as presently claimed (paragraphs 137-138).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use Pigment Yellow 139 in the ink jet ink of Zhu et al. '933 in order to produce yellow ink, and thereby arrive at the claimed invention.

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17. Claims 1-3, 5, 7, 12-22, and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. (U.S. 2003/0227531) in view of Zhu et al. '878 (U.S. 2004/0110868).

Hosoi et al. disclose ink jet ink comprising water, 0.5-20% opaque pigment, i.e. Pigment Yellow 74 and Pigment Yellow 98, 0.1-10% acidic resin such as acrylic resin, 0.05-20% polyethyleneimine, 1-60% solvent including polyhydric alcohol and ethanol, surfactant, and less than 20% conductivity agent. Hosoi et al. further disclose method of printing the ink onto substrate by ejecting the ink from printer onto the substrate (paragraphs 2, 55, 61, 66-69, 72, 83, 86, 94, 96-98, and 112).

The difference between Hosoi et al. and the present claimed invention is the requirement in the claims of specific conductivity agent.

Zhu et al. '878, which is drawn to ink jet ink, disclose the use of less than 5% hydrophobic conductivity agent such as tetrabutylammonium hexafluorophosphate (paragraphs 14 and 24) in order to impart sufficient conductivity to the ink.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use hydrophobic conductivity agent in the ink of Hosoi et al. in order to produce ink jet ink with conductivity sufficient for printing, and thereby arrive at the claimed invention.

18. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. in view of Zhu et al. '878 as applied to claims 1-3, 5, 7, 12-22, and 25-26 above, and further in view of Santilli et al. (U.S. 5,738,716).

The difference between Hosoi et al. in view of Zhu et al. '878 and the present claimed invention is the requirement in the claims of Pigment Yellow 139.

Hosoi et al. disclose the use of opaque pigments including Pigment Yellow 74, however, there is no disclosure of Pigment Yellow 139.

Santilli et al., which is drawn to ink jet inks, disclose the use of Pigment Yellow 139 in order to produce ink with desired color wherein the pigment does not release toxic byproduct when it degrades. Further, Santilli et al. disclose the equivalence and interchangeability of Pigment Yellow 74, as disclosed by Hosoi et al., with Pigment Yellow 139 as presently claimed (col.2, lines 1-7).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use Pigment Yellow 139 in the ink jet ink of Hosoi et al. in order to produce yellow ink, and thereby arrive at the claimed invention.

19. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. in view of Zhu et al. '878 as applied to claims 1-3, 5, 7, 12-22, and 25-26 above, and further in view of Zhu et al. '933 (U.S. 6,221,933)

The difference between Hosoi et al. in view of Zhu et al. '878 and the present claimed invention is the requirement in the claims of specific organic solvent.

Zhu et al. '933, which is drawn to ink jet ink, disclose the use of methyl ethyl ketone in order to improve ink stability and inhibit gel formation (col.4, lines 51-57 and 64-67).

In light of the motivation for using methyl ethyl ketone disclosed by Zhu et al. '933 as described above, it therefore would have been obvious to one of ordinary skill in the art to use

methyl ethyl ketone in the ink jet ink of Hosoi et al. in order to produce stable ink, and thereby arrive at the claimed invention.

20. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. in view of Zhu et al. '878 as applied to claims 1-3, 5, 7, 12-22, and 25-26 above, and further in view of Mead et al. (U.S. 5,596,027).

The difference between Hosoi et al. in view of Zhu et al. '878 and the present claimed invention is the requirement in the claims of specific acidic resin.

Mead et al., which is drawn to ink jet ink, disclose the use of acidic resin with acid number of 100-300 such as styrene/ α -methylstyrene/acrylic acid copolymer in order to produce water resistant image (col.10, lines 21-24 and col.11, lines 16-19).

In light of the motivation for using specific acidic resin disclosed by Mead et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use styrene/ α -methylstyrene/acrylic acid copolymer in the ink jet ink of Hosoi et al. in order to produce ink that produces water resistant images, and thereby arrive at the claimed invention.

Response to Arguments

21. All outstanding rejections are overcome by applicants' amendment filed 10/12/05. However, given that Marshall et al. is still utilized against the present claims, a response to applicants' arguments regarding this reference is set forth below.

Applicants' argue that Marshall et al. teaches away from the presently claimed invention, i.e. against the use of methyl ethyl ketone or large amounts of organic solvent.

However, firstly, it is noted that with the exception of claims 20 and 25 which require amounts of organic solvent of about 40 to about 90% and about 60 to about 80%, respectively, and claim 6 which requires the use of methyl ethyl ketone, there is no requirement in the present claims that the ink comprise methyl ethyl ketone or large amounts of solvent. Claims 1-5, 7-19, and 21-24 only require that the ink comprises organic solvent which can encompass any type or amount of solvent.

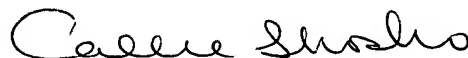
Further, while it is agreed that Marshall et al. teaches that the ink comprises no methanol, ethanol, methyl ethyl ketone, or other such low molecular weight solvents, note that Marshall et al. is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely, the use of conductivity agents in ink jet inks in order that the ink possess sufficient conductivity so that the ink droplets can be directed as desired from ink jet printer to substrate, and in combination with the primary reference, discloses the presently claimed invention. Marshall et al. is not used for its teaching of solvent. This is already disclosed by Zhu et al. '933 or Hosoi et al. Further, it is significant to note that Marshall et al. disclose that the conductivity agents are those used in "conventional" ink jet formulations.

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22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
12/2/05